

What I claim is:

1. A multi-chip package type semiconductor device, comprising:

an insulating substrate having thereon a first conductive pattern and a second conductive pattern;

5 a first semiconductor chip having a first internal circuit on the insulating substrate, the first semiconductor chip having a first terminal pad connecting to the first internal circuit and a conductive relay pad isolated from the first terminal pad, and the conductive relay pad including a first area and a second area;

10 a second semiconductor chip on the first semiconductor chip, the second semiconductor chip being smaller than the first semiconductor chip, and having a second internal circuit and having a second terminal pad connecting to the second internal circuit;

a first bonding wire connecting the first terminal pad to the first conductive pattern;

15 a second bonding wire connecting the second conductive pattern to the conductive relay pad in the first area; and

a third bonding wire connecting the conductive relay pad in the second area to the second terminal pad;

20 wherein the lengths of the first, second and third bonding wire are approximately the same.

2. A multi-chip package type semiconductor device, as claimed in claim 1,

wherein the second semiconductor chip is placed on the center of the first semiconductor chip.

3. A multi-chip package type semiconductor device, as claimed in claim 2, further comprising a first metal bump formed on the conductive relay pad in the first area and a second metal bump formed on the second terminal pad, wherein the first bond as the beginning connection of the first bonding wire is preformed at the first terminal pad and the second bond as the ending connection of the first bonding wire is made at the first conductive pattern, wherein the first bond as the beginning connection of the second bonding wire is preformed at the second conductive pattern and the second bond as the ending connection of the second bonding wire is made at the first metal bump, and wherein the first bond as the beginning connection of the third bonding wire is preformed at the conductive relay pad in the second area and the second bond as the ending connection of the third bonding wire is made at the second metal bump.

4. A multi-chip package type semiconductor device, as claimed in claim 2, further comprising a metal bump formed on the conductive relay pad in the second area, wherein the first bond as the beginning connection of the first bonding wire is preformed at the first terminal pad and the second bond as the ending connection of the first bonding wire is made at the first conductive pattern, wherein the first bond as the beginning connection of the second bonding wire is preformed at the

conductive relay pad in the first area and the second bond as the ending connection of the second bonding wire is made at the second conductive pattern, and wherein the first bond as the beginning connection of the third bonding wire is preformed at the second terminal pad and the second bond as the ending connection of the third bonding wire is made at the metal bump.

5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
155
160
165
170
175
180
185
190
195
200
205
210
215
220
225
230
235
240
245
250
255
260
265
270
275
280
285
290
295
300
305
310
315
320
325
330
335
340
345
350
355
360
365
370
375
380
385
390
395
400
405
410
415
420
425
430
435
440
445
450
455
460
465
470
475
480
485
490
495
500
505
510
515
520
525
530
535
540
545
550
555
560
565
570
575
580
585
590
595
600
605
610
615
620
625
630
635
640
645
650
655
660
665
670
675
680
685
690
695
700
705
710
715
720
725
730
735
740
745
750
755
760
765
770
775
780
785
790
795
800
805
810
815
820
825
830
835
840
845
850
855
860
865
870
875
880
885
890
895
900
905
910
915
920
925
930
935
940
945
950
955
960
965
970
975
980
985
990
995
1000

5. A multi-chip package type semiconductor device, as claimed in claim 3, wherein the conductive relay pad is rectangularly-shaped, and is formed on the periphery of the first semiconductor chip, and the longer side of the rectangularly-shaped conductive relay pad is parallel to the side of the first semiconductor chip.

6. A multi-chip package type semiconductor device, as claimed in claim 3, wherein the conductive relay pad is rectangularly-shaped, and is formed on the periphery of the first semiconductor chip, and the shorter side of the rectangularly-shaped conductive relay pad is parallel to the side of the first semiconductor chip.

7. A multi-chip package type semiconductor device, as claimed in claim 6, wherein the first area of the rectangularly-shaped conductive relay pad is closer to the side of the first semiconductor chip than the second area.

8. A multi-chip package type semiconductor device, as claimed in claim 4, wherein the conductive relay pad is rectangularly-shaped, and is formed on the

periphery of the first semiconductor chip, and the longer side of the rectangularly-shaped conductive relay pad is parallel to the side of the first semiconductor chip.

9. A multi-chip package type semiconductor device, as claimed in claim 4,
5 wherein the conductive relay pad is rectangularly-shaped, and is formed on the periphery of the first semiconductor chip, and the shorter side of the rectangularly-shaped conductive relay pad is parallel to the side of the first semiconductor chip.

10. A multi-chip package type semiconductor device, as claimed in claim 9,
10 wherein the first area of the rectangularly-shaped conductive relay pad is closer to the side of the first semiconductor chip than the second area.

11. A multi-chip package type semiconductor device, as claimed in claim 3,
15 wherein the first metal bump is not physically connected to the first bond of the third bonding wire, but is electrically connected to the first bond of the third bonding wire via the conductive relay pad.

12. A multi-chip package type semiconductor device, as claimed in claim 4,
20 wherein the metal bump is not physically connected to the first bond of the second bonding wire, but is electrically connected to the first bond of the second bonding wire via the conductive relay pad.

second internal circuit and having a second terminal pad connecting to the second internal circuit;

a first bonding wire connecting the first terminal pad to the first conductive pattern;

5 a second bonding wire connecting the second conductive pattern to the conductive relay pad; and

a third bonding wire connecting the conductive relay pad to the second terminal pad;

10 wherein the lengths of the first, second and third bonding wire are approximately the same.

16. A multi-chip package type semiconductor device, as claimed in claim 15, wherein the second semiconductor chip is placed on the center of the first semiconductor chip.

15 17. A multi-chip package type semiconductor device, as claimed in claim 16, further comprising a first metal bump formed on the conductive relay pad and a second metal bump formed on the second terminal pad, wherein the first bond as the beginning connection of the first bonding wire is preformed at the first terminal pad and the second bond as the ending connection of the first bonding wire is
20 made at the first conductive pattern, wherein the first bond as the beginning connection of the second bonding wire is preformed at the second conductive

pattern and the second bond as the ending connection of the second bonding wire is made at the first metal bump, and wherein the first bond as the beginning connection of the third bonding wire is preformed at the first metal bump and the second bond as the ending connection of the third bonding wire is made at the second metal bump.

18. A multi-chip package type semiconductor device, as claimed in claim 16, further comprising a metal bump formed on the conductive relay pad, wherein the first bond as the beginning connection of the first bonding wire is preformed at the first terminal pad and the second bond as the ending connection of the first bonding wire is made at the first conductive pattern, wherein the first bond as the beginning connection of the second bonding wire is preformed at the conductive pattern and the second bond as the ending connection of the second bonding wire is made at the metal bump, and wherein the first bond as the beginning connection of the third bonding wire is preformed at the second terminal pad and the second bond as the ending connection of the third bonding wire is made at the metal bump.